

How important are Asian sources of mercury to the western U.S.?

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Asia is believed to be the largest source of atmospheric mercury emissions on the planet. Because long-range transport of pollutants from Asia to the U.S. occurs on a regular basis, we seek to quantify the contribution of Asian Hg on background conditions in the U.S. To do this, we have recently made observations of Hg at sites on both sides of the Pacific. In the Pacific Northwest, we are measuring Hg at a new mountain top station on the summit of Mt. Bachelor, Oregon. To better characterize the Asian source, we also made observations at Okinawa Japan, which receives direct outflow from Asia. In this regard it is critical to know the fraction of Hg which is emitted and transported in the elemental, reactive gaseous and particulate forms, since these have such different removal mechanisms and lifetimes. Observations of elemental, reactive and particulate Hg at Okinawa Japan during the spring of 2004 (presented in more detail by Prestbo et al) confirmed the presence of very large Hg sources on the Asian continent. Observations at Mt. Bachelor of total Hg (presented in more detail by Swartzendruber et al.) confirm that long-range transport of mercury can in fact bring Asian mercury to the U.S. However, from the Okinawa observations, we found that only a relatively small fraction of this mercury was in the reactive or particulate forms. This implies that while Asian mercury sources are a major contributor to the global pool, direct long-range transport of Asian mercury is not likely to be a major factor on western U.S. mercury deposition. In the coming year we plan to test hypothesis by making speciated mercury measurements during long-range transport events on the U.S. west coast.